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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,057	12/22/1999	HIROYUKI FUJII	3874	5712

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FASSE PATENT ATTORNEYS, P.A.
P.O. BOX 726
HAMPDEN, ME 04444-0726

EXAMINER

SANTIAGO, MARICELI

ART UNIT PAPER NUMBER

2879

DATE MAILED: 01/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/470,057

Applicant(s)

FUJII, HIROYUKI

Examiner

Mariceli Santiago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 64-70 is/are allowed.
- 6) ☒ Claim(s) 37-59 and 61-63 is/are rejected.
- 7) ☒ Claim(s) 60 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

The Amendment, filed on September 27, 2002, has been entered and acknowledged by the Examiner.

Cancellation of claims 1-36 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 37 and 39-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang et al. (US 4,769,292).

Regarding claims 37 and 39-45, Ebisawa discloses an organic EL device having a luminescent material containing layer interposed between a positive electrode and a negative electrode, the negative electrode containing f and p elements wherein the f-element is at least

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one element selected from the group consisting of Be, Ti, Mn, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Lu and Hf (Column 40, lines 32-68 – Column 41, lines 1-40) and the p-element is at least one element selected from the group consisting of B, C, Al, Zn, Cd, Te, Ge, As, Se, Sb and Hg (Column 41, lines 41-68 – Column 42, lines 1-40).

Claims 37, 39-47, 49, 51-59 and 61-62 are rejected under 35 U.S.C. 102(e) as being anticipated by Ebisawa et al. (US 6,59,204).

Regarding claims 37 and 39-45, Ebisawa discloses an organic EL device having a luminescent material containing layer interposed between a positive electrode and a negative electrode, the negative electrode containing f- and p-elements wherein the f-element is at least one element selected from the group consisting of Ti, Zr, Nb, La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, Er, Tm, Lu, Hf and Ta (Column 7, lines 5-29) and the p-element is at least one element selected from the group consisting of B, C, N, O and Al (Column 7, lines 5-29).

Regarding claims 46-47 and 61-62, Ebisawa discloses an organic EL device wherein a mean electronegativity value E_{AVE} of the negative electrode is in the range of 1.50-1.91, relative to an electronegative value of 1.15 of a lanthanoid element, wherein the lanthanoid element is Ce, wherein the mean electronegativity is calculated by weighting an electronegativity value of each negative electrode-constituting f-element and p-element by a proportion of a number of atoms of the respective f- and p-element present in the negative electrode (Column 7, lines 5-29; Ebisawa discloses the at% of the rare-earth elements ranging between 0.1-25%, and the at% of Al ranging between 99.9-75%, used for calculating the E_{AVE}).

Regarding claims 49 and 51-59, Ebisawa discloses an organic EL device having a luminescent material containing layer interposed between a positive electrode and a negative electrode, the negative electrode containing f-, p- and d-elements wherein the f-element is at

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least one element selected from the group consisting of Ti, Zr, Nb, La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, Er, Tm, Lu, Hf and Ta (Column 7, lines 5-29), the p-element is at least one element selected from the group consisting of B, C, N, O and Al (Column 7, lines 5-29) and the d-element is at least one element selected from the group of Mo, Ag and B (Column 7, lines 5-29; Ebisawa teaches the use of binary or ternary alloy systems containing these metal elements).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38, 48, 50 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebisawa et al. (US 6,59,204).

Regarding claims 38 and 50, Ebisawa discloses an organic EL device wherein the luminescent material containing layer comprises at least a host, as a principal component, and a fluorescent dopant (Column 10, lines 13-16). Ebisawa is silent in regards to the limitation of a molar mass ratio of a molecule of the dopant to a molecule of the host (dopant/host) is in the range of 0.344 to 2.90. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a molar mass ratio of a molecule of the dopant to a molecule of the host (dopant/host) in the range of 0.344 to 2.90, since optimization of workable ranges is considered within the skill of the art.

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Regarding claims 48 and 63, Ebisawa discloses the claimed invention except for the limitation of the organic EL device having an emission efficiency of at least 10.0 cd/A when the device is operated by a flow of a DC current to emit light with a controlled luminance of 100 cd/m², the emission efficiency being calculated by dividing the luminance by a current density. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to provide an organic EL device having a controlled luminance of 100 cd/m², and an emission efficiency, as calculated by dividing the luminance by a current density, being not below 10.0 cd/A, since discovering an optimum value of a result variable is considered within the skills of the art.

Claims 38 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. (US 4,769,292).

Regarding claim 38, Tang discloses an organic EL device wherein the luminescent material containing layer comprises at least a host, as a principal component, and a fluorescent dopant (see Tang, Column 6, lines 37-48). Tang is silent in regards to the limitation of a molar mass ratio of a molecule of the dopant to a molecule of the host (dopant/host) is in the range of 0.344 to 2.90. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a molar mass ratio of a molecule of the dopant to a molecule of the host (dopant/host) in the range of 0.344 to 2.90, since optimization of workable ranges is considered within the skill of the art.

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Regarding claim 48, Tang discloses the claimed invention except for the limitation of the organic EL device having an emission efficiency of at least 10.0 cd/A when the device is operated by a flow of a DC current to emit light with a controlled luminance of 100 cd/m², the emission efficiency being calculated by dividing the luminance by a current density. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to provide an organic EL device having a controlled luminance of 100 cd/m², and an emission efficiency, as calculated by dividing the luminance by a current density, being not below 10.0 cd/A, since discovering an optimum value of a result variable is considered within the skills of the art.

Allowable Subject Matter

Claims 64-70 are allowed.

Claim 60 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 60, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 60, and specifically comprising the limitation of the p-element is Sb and the d-element is at least one element selected from Ag, Cu, Au and Al.

Regarding claim 64, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 64, and specifically comprising the limitation

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of the negative electrode comprises a first layer closest to the luminescent material-containing layer and a second layer overlying the first layer and a third layer overlying the second layer, and wherein the first layer is made from at least one of the f-element, the layer is made of a mixture or compound of the f- and p-elements and the third layer is made of at least one of the p-element.

Regarding claims 65-67, claims 65-67 are allowable for the reasons given in claim 64 because of their dependency status from claim 64.

Regarding claim 68, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 68, and specifically comprising the limitation of the negative electrode comprises a first layer closest to the luminescent material-containing layer and a second layer overlying the first layer and a third layer overlying the second layer, and wherein the first layer is made from at least one of the f-element, the layer is made of a mixture or compound of the f- and p-elements and the third layer is made of at least one of the p-element.

Regarding claims 69-70, claims 69-70 are allowable for the reasons given in claim 68 because of their dependency status from claim 68.

Response to Arguments

Applicant's arguments with respect to claims 37-63 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (703) 305-1083. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382. Additionally, the following fax phone numbers can be used during the prosecution of this application (703) 872-9318 (for response before a Final Action) and (703) 872-9319 (for response after a Final Action).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MS 1/15/03
Mariceli Santiago
Patent Examiner
Art Unit 2879

Ashok Patel
ASHOK PATEL
PRIMARY EXAMINER